



**Testimony of
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On
H.R. 4030, the Congressional Medal for Outstanding
Contributions in Math and Science Education Act of 2004**

Before the

Subcommittee on Basic Research
Committee on Science
U.S. House of Representatives

March 30, 2004

Chairman Smith and distinguished members of the Subcommittee, I appreciate the opportunity to testify on behalf of the National Science Foundation (NSF) concerning your proposed legislation to establish the Congressional Partners in Education Gold Medal Program.

Mr. Chairman, as you know, the Administration broadly promotes partnerships and collaborations across the Federal government and with the private sector. Any actions that would encourage and recognize the importance of these undertakings are to be commended, and the Administration appreciates the Chair's interest in and support of collaborations. Alliances that engage broad and diverse sectors of society in promoting student interest and improving achievement in science, technology, engineering and mathematics can contribute significantly to preparing citizens to fully participate in our democracy, and are very important to our Nation's progress and growth.

However, there are several issues raised by the draft legislation that should be addressed before a final version of the bill is considered.

1. ***Expand educational levels impacted beyond K-12.*** The current draft of the bill focuses on partnerships that aim to improve achievement by students at the K-12 level. It should be broadened to address the whole educational spectrum, from pre-K through higher education, including, of course, community colleges. Each educational level offers opportunities and challenges that can be fruitfully addressed by partnerships with sectors of society whose primary activity is not education.

Examples of the broad range of public-private partnerships that support educational excellence in science, technology, engineering and mathematics (STEM):

- While it is still too early to verify the impact on enhanced student learning, several Math and Science Partnership (MSP) projects illustrate the diversity and scope of collaborations that are having considerable impact on bringing disparate stakeholders together to enhance STEM education at various levels. For example, the El Paso Collaborative for Academic Excellence is engaging local school districts with scientists, mathematicians and engineers from the University of Texas at El Paso and the El Paso Community College to support the improvement of PreK-12 instruction and achievement in mathematics and science for all students. In addition to the core partners, which also include 12 independent school districts, the Region 19 Education Service Center, the El Paso MSP also includes such civic, business and community leaders as the Greater El Paso Chamber of Commerce, the El Paso Hispanic Chamber of Commerce, the El Paso Black Chamber of Commerce, the Texas Business and Education Coalition and the Interreligious Sponsoring Organization, as well as the Mayor of El Paso and the El Paso County Judge. The project focuses on enhancing teacher quality, quantity, and diversity; building the capacity to provide high quality curriculum instruction and assessment; supporting research to inform program design; and promoting institutional change.
- Building for Tomorrow (BFT) is a National Science Foundation funded project under the NSF Advanced Technological Education (ATE) program. The BFT grant is a 2001, 3-year, \$640,000 award to the New Jersey Center for Advanced Technological Education at Middlesex County College (MCC) in partnership with Johnson and Johnson, the New Jersey Chamber of Commerce, and FIRST Robotics. The key objective of BFT is to increase the number of students (particularly those underserved) in urban school districts participating in national STEM competitions such as FIRST robotics, BOTS robotics, LEGO, Math Olympiad, and Science competitions. Under the grant, BFT is managed by the New Jersey Center for Advanced Technological Education, which has conducted one-week summer workshops in New Jersey, Illinois, Missouri and California with nationwide school attendance. With the aim to empower teachers, the grant funds the attendance of five (5) faculty from up to seven (7) urban district high schools and middle schools. The faculty receive training to build leadership, project management, team development and industry-partnering skills. The faculty teams are challenged to build robots and compete against each other by the end of the workshop. The grant also funds \$1000 to each school that enters a national STEM competition after completion of the workshop.

- Bellevue Community College in the State of Washington has teamed with Microsoft Corporation and the American Association of Community Colleges (AACC) to develop the first systematic, nationwide plan for faculty development in the field of information technology (IT). The Working Connections IT Faculty Development Institute aims to provide early training for community college instructors on emerging IT workforce requirements.
 - A Regional Center for Nanofabrication Manufacturing Education, supported by NSF's Advanced Technological Education (ATE) program, is a partnership for enhancing nanotechnology education. The partners include the State of Pennsylvania, Penn State University, Pennsylvania's community colleges, the State System of Higher Education, Penn College of Technology, CAMtech, MET Inc., secondary schools, private industry, and other participants. The primary goal of the Center is to use the resources of the Penn State Nanofabrication Facility to develop and support K-12 and post-secondary nanotechnology awareness and education. The Center is dedicated to introducing students to the full range and full impact of nanofabrication applications, including biotechnology, pharmaceuticals, optoelectronics, information storage, materials manufacturing, and many others.
 - At National Instruments in Austin, Texas, the company's LabView software is a key component in the successful LEGO RoboLab products and curriculum. More than 10 percent of the company's engineers have gone through training conducted by the college of engineering at the University of Texas-Austin that is intended to make them effective classroom resources for teachers. After training, these practicing engineers serve as mentors, advisors, and collaborators for individual teachers in the community.
2. ***Expand types of employers and organizations eligible beyond the private sector.*** HR 4030 targets for recognition private employers and their employees who partner with educational institutions. Broadening the types of entities that are eligible to be recognized for engaging in productive partnerships would greatly enhance the diversity of opportunities available, the number of participants engaged, and the potential impact of the program. The goals of the program would be promoted by recognizing efforts by a greater diversity of employers, including nonprofits, local government agencies, other federal entities, etc. For example, partnership involving educational institutions at one level working to improve achievement of students at another could also be eligible for recognition (e.g., institutions of higher education partnering with elementary schools to supplement the expertise of K-12 teachers and improve learning by K-12 students, and in complementary fashion, teachers at the K-12 level partnering with higher education institutions to provide enriching experiences for those preparing to be teachers).

Examples of the involvement of a wide range of employers and community organizations in the enhancement of STEM education:

- In addition to the project in El Paso previously mentioned, the Math Science Partnership project lead by Hofstra University, which is improving teaching and learning in middle-level mathematics in ten school districts in New York. Its core partners include Hofstra University, the State University of New York at Stony Brook, the New York State Education Department, and ten Long Island school districts. Supporting partners include a local government social service agency (Long Island Family and Children's Association); UCLA Center for Mental Health in Schools; Carolina Biological Supply; Long Island Regional School Support Center; Boards of Cooperative Educational Services; professional teacher associations in science, mathematics, and technology; Brookhaven National Laboratory; and the Eisenhower Regional Alliance for Mathematics and Science Education.
 - The American Association of Community Colleges' Working Connections program and the National Workforce Center for Emerging Technologies with support from NSF's ATE program, offers a fast track to the Security+ certification course through the 2004 Working Connections summer institutes in California, Michigan, North Carolina and Texas. CompTIA, McGraw-Hill Technology Education and LearnKey's OnlineExpert have partnered in this grant providing certification exams, textbooks and courseware. The goals of this course are two-fold: (1) to provide community college faculty the knowledge and practical skills they need to pass the Security+ exam; and (2) to provide faculty with a set of labs that they can implement on their campuses in introductory level network security courses.
 - In Delaware, DuPont has partnered with the Delaware Department of Education, the Delaware Foundation for Science and Mathematics Education, the Delaware Science Coalition, public universities and others in the private sector to provide assistance in achieving the math and science standards adopted in 1995. The success in Delaware has encouraged DuPont to replicate its model in other regions where they have manufacturing facilities, such as Alabama, Tennessee, Pennsylvania, New Jersey and South Carolina. In South Carolina, as in Delaware, private industries have worked closely with the State's Department of Education, the National Science Resource Center, and employees of the partners to embed standards-based, inquiry-driven science teaching and learning into the school system.
3. ***Require that partnerships demonstrate achievement and sustainability.*** The bill proposes to consider for recognition collaborations that have existed for at least 2 years. The Administration feels that 2 years may not be enough time for a collaboration to mature and demonstrate sustainability. Two years is also insufficient time to gather the evidence needed to document improved achievement by students or a meaningful impact on the participating organizations or the community-at-large. It would be more appropriate to consider partnerships that have been in place for a longer period of time, perhaps 4-5 years, while recognizing that some collaborations may be able to demonstrate real educational gains in a shorter period of time.

4. ***Costs of program.*** A realistic appraisal of the cost of the program needs to be made. In general, this would include the costs to: advertise the program, review nominations; design and pay for the medals, hold an awards ceremony and associated conference to recognize recipients, and publicize the recipients in appropriate venues. Based on experience with the National Medal of Science award, the National Science Board estimates that the program would cost approximately \$750,000 a year for each of the first 2-3 years and somewhat less per year beyond that. If the award were to be accompanied by additional support to allow for the extension or development of the promising work being recognized, the costs would be much higher.

Proposed Next Steps

In addition to the recommendations contained above, there are a number of issues that would need to be resolved before the Congressional Medal for Outstanding Contributions in Math and Science Education could be put in place. The elements to be resolved include the nature of the award itself (e.g., an actual medal, a plaque, or a well-designed object made of crystal); the activities that might surround the awarding of the medal/plaque and who would participate; the mechanism of reviewing the nominations; the nomination process itself and the criteria to be used in evaluating potential recipients; and expectations regarding publicity both for the program and for the recipients. We believe that these issues should be specifically addressed in the legislation. If HR 4030 were to become enacted into law, NSF would collaborate with the Department of Education to identify finalists for the Medal.

NSF would propose to explore the contributions of employers/employees at a workshop on public/private partnerships in support of STEM education to identify lessons learned and best or promising practices. This workshop would also be used to develop a design for the proposed Congressional Partners in Education Gold Medal Program. We would invite participants from some of the most successful collaborations that we have supported, as well as representatives from our Corporate and Foundation Alliance (CFA). The CFA periodically brings together nearly 40 leading corporations and private philanthropic organizations to discuss successful programs, learn about NSF programs and research initiatives, share ideas about effective ways to sponsor change in STEM education, and collaborate with each other and with NSF in addressing areas of vital need.

Mr. Chairman, thank you again for the opportunity to testify. I want to thank you and your Subcommittee for its long-standing support for NSF in general, and for NSF's educational efforts in specific.

I would be pleased to respond to any questions you may have.